

July 17, 2023

NEx Request for Proposals Notice

NEx encourages you to submit proposals focused on the topic described below:

Project ID: SG24.04.

Project Title: Develop Guidelines for the use of non-metallic piles in different soil.

Background

Steel piles are commonly used in construction as deep foundations to support structures on soil that may not have sufficient bearing capacity or to transfer loads to deeper, more competent layers. The performance of steel piles is influenced by the properties of the surrounding soil. However, there can be several challenges or problems associated with steel piles in soil. Steel piles are susceptible to corrosion when exposed to soil and moisture. Corrosion can weaken the pile and reduce its load-bearing capacity over time.

Polymer piles, also known as plastic piles or synthetic piles, are an alternative to traditional steel or concrete piles in foundation construction. These piles are made of high-density polyethylene (HDPE), fiberglass-reinforced polymer (FRP), or other composite materials. They offer several advantages over traditional piles and are particularly useful in certain soil conditions and environmental settings. Here are some key points about polymer piles: corrosion resistance, lightweight and easy installation, chemical resistance, low maintenance, high load-bearing capacity, and environmental benefits.

One widely recognized standard for steel pile design is the American Institute of Steel Construction (AISC) Design Guide 32, titled "Design and Construction of Driven Pile Foundations." This guide provides comprehensive information on the design and construction of driven piles, including steel piles. It covers topics such as pile types, loadings, material specifications, design considerations, and installation methods. It appears that there are no universally recognized or widely adopted industry guidelines specifically dedicated to polymer pile selection and design. The use of polymer piles in construction is a relatively new and developing field, and as such, there is ongoing research and development in this area.

Proposal Request

We invite proposals from qualified/experienced researchers, engineering firms, and research institutions to undertake a comprehensive study to create a detailed set of guidelines that will provide engineers, contractors, and other stakeholders with clear instructions on the appropriate design, installation, and performance evaluation of polymer piles in various soil conditions. The guidelines should consider a wide range of soil types, including but not limited to sandy soil, clay soil, loamy soil, and cohesive soil. The selected firm will be responsible for the following tasks:

- a. Conducting a comprehensive review of existing literature, standards, and best practices related to the use of polymer piles in different soil types.
- b. Consulting with industry experts and stakeholders to gather insights and practical experiences.
- c. Developing detailed guidelines that address design considerations, installation methods, load testing, and performance evaluation for polymer piles in different soil conditions.

NEx Mission Statement

Collaborate globally to expand and accelerate the use of nonmetallics in the built environment to drive

innovation, research, education, awareness, adoption, and deployment.

NEx is committed to achieving its mission through Research and Development, Standards and Guidelines, Professional Development, and Advocacy and Awareness.

Funding Policy

NEx will impose a limit of 15% on indirect costs (overhead) by research organizations for any research it funds. The organization must waive the remainder of the indirect costs.

Award Amount

NEx does not impose any limit on the overall funding request; however, the anticipated budget for this project is to be around \$30,000-\$50,000. Proposals with higher budget estimates will be accepted with information on budget spending relevant to the value added to the project scope. Co-funding and co-sponsoring proposals with other organizations are welcomed.

Proposal Evaluation

NEx research proposals will be evaluated by the NEx Steering Committee. A winning proposal will be forwarded to the NEx Board of Directors with recommendations for funding.

Proposal evaluation criteria will include technical content, methodology, PI's relevant experience, potential impact/ industry adoption, budget and time, proposed deliverables, and outcome. NEx anticipates the completion of this project within 15 months duration.

Awarded Proposals

- The awarded proposal is expected to commence within the first quarter of 2024.
- NEx will enter into a contract with the researching entity. As part of the contract, it is mandated that the overhead or indirect return be set at no more than 15% of the direct cost of the research funding requested from NEx. Any overhead over the maximum allowed 15% that is waived by the researching entity shall be considered as cost sharing and shall be indicated on the budget table as waived overhead, separate from other co-funding. Non-compliant proposals in this regard shall be returned without review.
- The schedule of payments contingent upon milestone deliverables will be contained in the contract and will include, at a minimum, a final report deliverable to NEx. Progress reports, if required, will be identified in the final contract.
- If principal investigators (PI) from two organizations are collaborating on the research, the award must be to a single organization, which will then subcontract with the second organization.
- NEx will only consider funding research that involves the use of proprietary products if the goal of the research is to advance knowledge in a particular area of study and not solely on a proprietary product.
- In case of any co-funding arrangement with other organization(s), commitment letter(s) from co-funding organization(s) is required before funds are dispersed from NEx.
- The results of NEx-funded research will be owned by NEx, and possibly by other co-funding organization(s). PI should obtain approval from NEx before publishing any results.

Where and How to Submit Proposals

Submitted proposals will be evaluated by the NEx Steering Committee and the NEx Staff. Anyone who evaluates a proposal is required to agree and abide by NEx policies on confidentiality and conflict of interest.

Please email the proposal and supporting information to info@nonmetallic.org, by end of the day, **September 5, 2023**. The email subject line and file name shall include project ID (see top of page 1) and the name of the proposing organization (For example: "SG24.xx University of xyz").

If you have any questions regarding the proposal requirements or process, please contact NEx Technical Director, Aparna Deshmukh (aparna.deshmukh@nonmetallic.org).

Required Proposal Content

Proposals submitted to the NEx shall be provided in one unprotected pdf file and shall contain:

1. Section 1: Executive summary (maximum 2 pages)

- 1.1. NEx RFP ID:
- 1.2. Proposal Title:
- 1.3. Principal Investigator (name, affiliation, address, phone, email):
- 1.4. Objective of the proposal (300 words or less)
- 1.5. Description of significance/impact of the project (300 words or less)

2. Section 2: Main body (maximum 5 pages)

- 2.1. Background
- 2.2. Project description (include enough detail to understand how the project will be performed)
- 2.3. Schedule (include matrix of tasks and schedule of completion, including quarterly progress and final reports, and semi-monthly teleconference updates)
- 2.4. List of deliverables/anticipated products, such as new material specifications, new documents, published papers, presentations, NEx/ACI University Webinar, or conference proceedings.
- 2.5. Budget (table of funding that includes all support such as):
 - Total budget
 - Any co-funding from organizations other than NEx (monetary, in-kind)
 - Net value of waived institution overhead or planned co-funding.

3. Section 3: Supporting Documents (maximum 2 pages each)

- 3.1. Qualifications of the investigator, co-investigator(s), if any, and/or institutions.